Amendment to the Claims:

1-18. (Cancelled)

19. (New) A method of correcting magnetic field drift in a magnetic resonance imaging apparatus, the method comprising:

performing a first single shot EPI sequence in which a first excitation induces a following first magnetic resonance signal including a series of echoes with each of a series of different phase encodings including one of the echoes with zero phase encoding, the zero phase-encoded echo being timed to occur at a preselected time interval after the first excitation;

determining a first phase of the first magnetic resonance signal at the preselected time interval after the first excitation;

performing a second single shot EPI sequence in which a second excitation pulse induces a following second magnetic resonance signal including a series of magnetic resonance echoes with a series of different phase encoding, one of them with a zero phase encoding, the zero phase-encoded echo being timed to occur at said preselected time interval after the second excitation;

determining a second phase of the second magnetic resonance signal at said preselected time interval after the second excitation;

determining a difference between the first and second determined phases;

from the determined phase difference, determining at least one of an adjustment to a frequency for excitation in a subsequent single shop EPI sequence and a magnitude of a main magnetic field adjustment.

20. (New) The method of claim 19, wherein the method further includes:

comparing the difference between the first and second determined phases with a threshold and causing the resonance frequency or the main magnetic field to be adjusted if the difference between the first and second determined phases exceeds the threshold.

21. (New) The method of claim 19, wherein determining the first and second phases includes:

sampling the first magnetic resonance signal at said preselected time interval;

sampling the second magnetic resonance signal at said preselected time interval;

Fourier transforming the sampled first and second magnetic resonance signals to the frequency domain such that the difference between the first and second phases is determined in the frequency domain.

22. (New) A computer readable storage medium having stored thereon a computer program including instructions which, when executed by a computer, cause the computer to perform the method of claim 19.

23. (New) A method of monitoring magnetic field drift in a magnetic resonance imaging apparatus, the method comprising:

performing a first gradient echo sequence in which a first excitation is followed by a series of magnetic resonance echoes with a series of phase encoding, a magnetic resonance echo at a preselected time interval after the first excitation being given zero phase encoding;

determining a first phase of a first magnetic resonance signal induced by the first excitation at the preselected time interval after the first excitation during the echo given zero phase encoding;

performing a second gradient echo data sequence in which a second excitation pulse is applied followed by a series of magnetic resonance echoes, a magnetic resonance echo at the preselected time interval after the second excitation being given zero phase encoding;

determining a second phase of a second magnetic resonance signal induced by the second excitation at the preselected time interval after the second excitation during the echo given zero phase encoding;

comparing the first and second determined phases;

determining a shift in a resonance of a resonance frequency based on the comparing of the first and second phases.

24. (New) The method according to claim 23, further including:

comparing a difference between the first and second determined phases with a threshold;

if the difference exceeds the threshold, adjusting at least one of an excitation frequency and a magnitude of a main magnetic field.

25. (New) The method of claim 23, wherein determining the first and second phases includes:

sampling the first magnetic resonance signal at said preselected time interval;

sampling the second magnetic resonance signal at said preselected time interval;

Fourier transforming the sampled first and second magnetic resonance signals to the frequency domain such that the step of comparing the first and second phases is performed in the frequency domain.

26. (New) The method of claim 23, further including:

determining a plurality of first phases at a plurality of preselected time intervals after the first excitation; and

determining a plurality of the second phases at the same preselected time intervals after the second excitation.

27. (New) A computer readable medium having thereon a computer program including instructions which, when executed by a processor, cause the processor to perform the method of claim 23.

28. (New) A magnetic resonance imaging apparatus including at least one processor programmed to perform the method of claim 23.

29. (New) The magnetic resonance imaging apparatus of claim 28, further including a display which displays the determined shift of the resonance frequency.

30. (New) The magnetic resonance imaging apparatus of claim 28, further including:

a controller which controls the excitations in accordance with the determined shift of the resonance frequency.

31. (New) The magnetic resonance imaging apparatus of claim 28, further including:

a controller for controlling a magnitude of the magnetic field in accordance with the determined shift of the resonance frequency.

32. (New) A computer readable storage medium having stored thereon a computer program including instructions which, when executed by a computer of a magnetic resonance system, causes:

performing a first single shot magnetic resonance sequence in which a first excitation pulse is followed by a first magnetic resonance signal including a series of echoes, an echo with zero induced phase encoding is caused to occur at a selected time interval after the first excitation;

determining a first phase of the first magnetic resonance signal during the echo with zero induced phase encoding at the selected time interval after the first excitation;

performing a second single shot magnetic resonance sequence in which a second excitation pulse is applied followed by a second magnetic field including a series of magnetic resonance echoes, an echo with zero induced phase encoding is caused to occur at the selected time interval after the second excitation such that both the first and second magnetic resonance signals have echoes with zero induced phase encoding the same selected time after the corresponding excitation pulse;

determining a second phase of the second magnetic during the echo with zero induced phase encoding at the selected time interval after the second excitation;

determining a difference between the first and second determined phases;

determining a shift of a resonance of a resonance frequency based on determined differences between the first and second phases.

33. (New) The medium of claim 32, wherein when the instructions are executed by the computer, they further cause:

at least one of an excitation frequency and a main magnetic field strength to be adjusted followed by performing another single shot sequence.